



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
[www.uspto.gov](http://www.uspto.gov)

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/536,275	03/27/2000	Arthur W. Wang	PD-990213	3726
20991	7590	06/24/2005	EXAMINER	
			NGUYEN, DAVID Q	
		ART UNIT		PAPER NUMBER
		2681		

DATE MAILED: 06/24/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b>	<b>Applicant(s)</b>	
	09/536,275	WANG, ARTHUR W.	
	<b>Examiner</b>	<b>Art Unit</b>	
	David Q. Nguyen	2681	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) Responsive to communication(s) filed on 14 June 2005.
- 2a) This action is FINAL.                    2b) This action is non-final.
- 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) Claim(s) 1-21,23 and 25-34 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) Claim(s) \_\_\_\_\_ is/are allowed.
- 6) Claim(s) 1-21,23 and 25-34 is/are rejected.
- 7) Claim(s) \_\_\_\_\_ is/are objected to.
- 8) Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) The specification is objected to by the Examiner.
- 10) The drawing(s) filed on \_\_\_\_\_ is/are: a) accepted or b) objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) All    b) Some \* c) None of:
  1. Certified copies of the priority documents have been received.
  2. Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)	4) <input type="checkbox"/> Interview Summary (PTO-413)
2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)	Paper No(s)/Mail Date: _____
3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____	5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)
	6) <input type="checkbox"/> Other: _____

## **DETAILED ACTION**

### ***Response to Arguments***

1. Applicant's arguments with respect to claims 1-21,23,25-34 have been considered but are moot in view of the new ground(s) of rejection.

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1,3,6-7,9-13,17,19-21,23,25-33 are rejected under 35 U.S.C. 103(a) as being unpatentable over Castiel et al. (US 2002/0160710) in view of Porcelli et al. (US 6,333,924 B1).

Regarding claim 1, Castiel et al discloses a communications system comprising: a plurality of regional ground stations (fig. 1; page 4, paragraph 0062); a plurality of satellites located in an elliptical sub-geosynchronous orbit with respect to the earth, said satellites operating in a service area in a synchronized manner to provide continuous coverage to said service area (see fig. 1; paragraphs 0003 and 0004; paragraph 0143); and a plurality of user terminals within the service area receiving communication signals from satellite (see figs. 2 and page 4, paragraph 0065). Castiel et al. does not disclose said satellite generating a plurality of beams with variable beam widths to obtain a substantially uniform cell size covering said service area. However, Porcelli et al discloses a satellite generating a plurality of beams with variable

beam widths to obtain a substantially uniform cell size covering said service area (see col. 16, lines 22-25). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the above teaching of Porcelli et al to the system of Castiel et al. in order to provide a desired level of coverage.

Regarding claim 12, Castiel et al discloses a communications system comprising: a first plurality of satellites located in an elliptical sub-geosynchronous orbit with respect to the earth, said satellites operating in a service area in a synchronized manner to provide continuous coverage to said service area (see explanation in claim 1); said first plurality of satellites providing a first system capacity (see fig. 4g and its description); and a second plurality of satellites deployed after said first plurality of satellites, said second plurality of satellites providing a second system capacity greater than the first system capacity (see fig. 4g and its description). Castiel et al does not discloses said satellites generating a plurality of beams with variable beamwidth to obtain a substantially uniform cell size covering said service area. However, Porcelli et al discloses satellites generating a plurality of beams with variable beamwidth to obtain a substantially uniform cell size covering said service area (see explanation in claim 1). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the above teaching of Porcelli et al to the system of Castiel et al. in order to provide a desired level of coverage.

Regarding claim 25, Castiel et al discloses a method of developing a customized satellite constellation comprising the step of: developing a first satellite constellation having a first set of satellites having regional coverage having a first service area, wherein said first constellation comprises a first plurality of satellites located in an elliptical sub-geosynchronous orbit with

respect to the earth, said satellites operating in a service area in a synchronized manner to provide continuous coverage to said service area; launching a second set of satellite to form a second satellite constellation having primary market coverage in cooperation with said first set of satellites to have a second service area greater than said first service area (see explanation in claims 1 and 12). Castiel et al. does not discloses said satellites generating a plurality of beams with variable beam widths formed as a function of orbit position to obtain a substantially uniform cell size covering said service area. However, Porcelli et al discloses satellites generating a plurality of beams with variable beamwidth to obtain a substantially uniform cell size covering said service area (see explanation in claim 1). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the above teaching of Porcelli et al to the system of Castiel et al. in order to provide a desired level of coverage.

Regarding claim 32, Castiel et al disclose a communications system comprising: a plurality of regional ground stations; a plurality of satellites located in an elliptical sub-geosynchronous orbit with respect to the earth, said satellites operating in a service area in a synchronized manner to provide continuous coverage to said service area, and a plurality of user terminals with the service area receiving communication signals from the satellite (see explanation in claim 1). Castiel et al does not disclose said satellites generating a plurality of beams with variable beam widths that vary as a function of orbital position to obtain a substantially uniform cell size covering said service area. However, Porcelli et al discloses satellites generating a plurality of beams with variable beam widths that vary as a function of orbital position to obtain a substantially uniform cell size covering said service area (see

explanation in claim 1). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the above teaching of Porcelli et al to the system of Castiel et al. in order to provide a desired level of coverage.

Regarding claims 3 and 13, the communications system of Castiel et al in view of Porcelli et al also discloses that the uniform cells are substantially fixed within the service area (see paragraphs 0003 and 0004 of Castiel).

Regarding claim 6, the communications system of Castiel et al in view of Porcelli et al also discloses that within said service area is a primary market area (see fig. 7's of Castiel).

Regarding claims 7 and 17, the communications system of Castiel et al in view of Porcelli et al also discloses that the plurality of satellites comprises a phase array to form said plurality of beams (see paragraph 0068 of Castiel).

Regarding claims 9-11 and 19-21, the communications system of Castiel et al in view of Porcelli et al also discloses that the plurality comprises less than 9 satellites; and the plurality comprises 4 satellites, 5 satellites; and said first plurality comprises less than 9 satellites; and the plurality comprises 4 satellites, 5 satellites (see paragraph 0104 and fig. 4g of Castiel).

Regarding claim 23, the communications system of Castiel et al in view of Porcelli et al also discloses wherein said orbits is inclined eccentric sub-geosynchronous orbit (see fig. 4g of Castiel).

Regarding claims 26 and 27, the method of Castiel et al in view of Porcelli et al also discloses launching a third set of satellites to form a third satellite constellation having optimized landmass coverage in cooperation with said first set of satellites and said second; the first

constellation, the second constellation and the third constellation comprise SGSO satellites (see explanation in claim 25, fig. 4g of Castiel).

Regarding claims 28-31, the method of Castiel et al in view of Porcelli et al also discloses the first and second set of satellites are non-interfering with GSO satellites; the first plurality of satellites and the second set of satellites have active arcs sized to provide continuous coverage to said second service area and be non-interfering with GSO satellites (see paragraphs 0030-0032 of Castiel)

Regarding claim 33, the communications system of Castiel et al in view of Porcelli et al also discloses wherein said plurality of satellites operate using a frequency of GSO satellite; (see paragraph 0098 and 101 of Castiel); wherein said plurality of satellite do not operate in GSO satellite avoidance zone (see col. 4, lines 46-55 of Castiel).

3. Claims 4-5 and 14-15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Castiel et al (US 2002/0160710 A1) in view of Porcelli et al. (US 6,333,924 B1) and further in view of Taormina et al. (US patent Number 6257526).

Regarding claims 4 and 14, the communications system of Castiel et al in view of Porcelli et al. does not disclose the plurality of beams providing equal capacity density to the cell size. However, Taormina et al disclose the plurality of beams providing equal capacity density to the cell size (see fig. 6; col. 5, lines 66-67; col. 6, lines 1-5). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the above teaching of Taormina to the system in order to provide a desired level of coverage.

Regarding claims 5 and 15, the communications system of Castiel et al in view of Porcelli et al. does not disclose wherein said sub-geosynchronous orbit has a minimum elevation

angle is greater than 10 degrees in the service area. However, Taormina et al. disclose wherein said sub-geosynchronous orbit has a minimum elevation angle is greater than 10 degrees in the service area (see col. 6, lines 25-27). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the above teaching of Taormina to the system in order to prevent rotation of the line of asides.

4. Claims 8 and 18 rejected under 35 U.S.C. 103(a) as being unpatentable over Castiel et al (US 2002/0160710 A1) in view of Porcelli et al. (US 6,333,924 B1) and further in view of Schloemer (US Patent Number RE37140).

Regarding claims 8 and 18, the communications system of Castiel et al in view of Porcelli does not disclose wherein said first plurality of satellites are disabled when coextensive with a geostationary orbit. However, Schloemer discloses wherein said first plurality of satellites are disabled when coextensive with a geostationary orbit (see col. 2, lines 45-50). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the above teaching of Schloemer to the system in order to keep satellites in their proper orbits.

5. Claim 2 is rejected under 35 U.S.C. 103(a) as being unpatentable over Castiel et al (US 2002/0160710 A1) in view of Porcelli et al. (US 6,333,924 B1) and further in view of Byrne et al. (US Patent Number 5990883).

Regarding claim 2, the communications system of Castiel et al in view of Porcelli et al. does not disclose the ground station coupled to one selected from the group consisting of an internet service provider, a broadcast television center and a corporate internet. However, Bryne discloses the ground station coupled to one selected from the group consisting of an internet

service provider, a broadcast television center and a corporate internet (see fig. 1). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the above teaching of Bryne to the system in order to provide multimedia program content to users.

6. Claim 16 is rejected under 35 U.S.C. 103(a) as being unpatentable over Castiel et al (US 2002/0160710 A1) in view of Porcelli et al. (US 6,333,924 B1) et al. (US 6,333,924 B1) and further in view of Wainfan et al. (US Patent Number 6339707).

Regarding claim 16, the communications system of Castiel et al in view of Porcelli et al. (US 6,333,924 B1) et al. does not disclose a primary market area having an elevation greater than thirty degrees. However, Wainfan discloses a primary market area having an elevation greater than thirty degrees (see col. 3, lines 62-63). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the above teaching of Wainfan to the system so that satellite service may be more efficiently realized.

### *Conclusion*

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to David Q. Nguyen whose telephone number is 571-272-7844. The examiner can normally be reached on 8:30AM-5:30PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, JOSEPH H. FEILD can be reached on (571)272-4090. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Art Unit: 2681

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

  
David Nguyen

  
JOSEPH FEILD  
SUPERVISORY PATENT EXAMINER